



SUPPORT MATERIAL #8: Carbon dioxide (CO₂) information sheet

Calculate: Activity 6

What is carbon dioxide (CO₂)?

Carbon dioxide (CO₂) is a colourless, odourless gas that is present in a low concentration in the Earth's atmosphere. It is essential to photosynthesis in plants and is also a significant greenhouse gas. Today, the majority of carbon dioxide (CO₂) emissions come from natural sources (see below). The rest are a result of human activities, primarily the burning of fossil fuels for energy. See page 2 for a diagram of the Carbon Cycle.

Carbon dioxide in its solid form is known as dry ice, which is used for a range of things, including freezing.

Photosynthesis

Photosynthesis is how plants obtain food and energy to grow. Using energy from sunlight, plants convert carbon dioxide and water into carbohydrates and oxygen. Plants remove carbon dioxide from the atmosphere by photosynthesis.

Where does carbon dioxide (CO₂) come from?

1. Natural sources

Respiration

Carbon dioxide (CO₂) is produced by organisms that obtain energy from breaking down sugars, fats and amino acids with oxygen as part of their metabolism in a process known as cellular respiration. This includes all plants, animals, many fungi and some bacteria. In humans, the carbon dioxide travels in the blood from the body's tissues to the lungs, from where it is exhaled.

Decomposition

Plants and animals also release carbon dioxide (CO₂) into the atmosphere when they decompose or decay. Animal and plant waste are also sources of carbon dioxide (CO₂).

Combustion

Carbon dioxide (CO₂) is produced and released into the atmosphere as a product of fires from, for example, farmers burning crop waste and bushfires.

Carbon dioxide (CO₂) is also released into the atmosphere through evaporation from oceans and during volcanic eruptions.

2. Human-made sources

Carbon dioxide (CO₂) is also produced through the burning of fossil fuels. Sources of human-made carbon dioxide (CO₂) include

- **transport:** vehicles, planes, ships
- **electric power generation using fossil fuels:** large-scale electricity plants
- **industry:** examples include the steel, paper and concrete industries
- **residential/commercial:** heating and cooling, lighting, water heating, refrigeration (using dry ice) and other appliances.

Carbon dioxide (CO₂) is used commercially in fizzy drinks, fire extinguishers and aerosols.

Sources

www.ace.mmu.ac.uk/eae/global_warming/older/carbon_dioxide.html

www.greenhouse.crc.org.au/about_greenhouse/carboncycle.cfm

Carbon Cycle

